

NON-PUBLIC?: N  
ACCESSION #: 8903100242  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Byron, Unit 1 PAGE: 1 OF 3

DOCKET NUMBER: 05000454

TITLE: REACTOR TRIP DUE TO DISENGAGED POSITIONER ARM ON  
FEEDWATER REGULATING  
VALVE

EVENT DATE: 01/31/89 LER #: 89-002-00 REPORT DATE: 03/01/89

OPERATING MODE: 1 POWER LEVEL: 099

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: J. Schrock,  
Operating Engineer Ext. 2216 TELEPHONE: 815-234-5441

COMPONENT FAILURE DESCRIPTION:

CAUSE: X SYSTEM: S J COMPONENT: FCV MANUFACTURER: B045  
REPORTABLE TO NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

Unit 1 was operating at 99% power at 0956 on January 31, 1989, when the reactor was tripped manually. Level in steam generator 1C was increasing because its feedwater regulating valve (1FW530) had failed fully open. The valve would not respond to automatic or manual controls. The reactor trip was prudent because steam generator 1C level was rapidly approaching its high-level automatic feedwater isolation setpoint (P-14). All safety systems functioned as designed. The unit was stabilized in Hot Standby at approximately 1114.

Feedwater regulating valve 1FW530 was found to have its valve positioner feedback arm disengaged from the valve follower. Neither manual nor automatic control was possible with the valve in this condition. The valve positioner was reconnected using locktite and a star washer to prevent future failures. Similar preventative action was performed on the remaining regulating valves on both Units.

END OF ABSTRACT

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A. PLANT CONDITIONS TO EVENT:

Event Date/Time 01-31-89 / 0956

Unit 1 MODE 1 - Power Operation Rx Power 99%

RCS AB! Temperature/Pressure Normal Operating

B. DESCRIPTION OF EVENT:

At 0955 station personnel were performing a Main Steam Isolation Valve SB! (MSIV) partial stroke test. During this test, each MSIV is partially closed. This action initiates a minor steam/feedwater flow perturbation. While responding to the change in demand for feedwater SJ! flow, the 1C steam generator feedwater regulating valve (1FW530) failed open. Consequently, the level in the 1C steam generator began to increase.

At 0955, the Nuclear Station Operator (NSO) (licensed reactor operator) noticed the 1C steam generator FW mismatch alarm and that the 1FW530 valve indicated fully open.

The NSO attempted to manually control the 1FW530 valve to reduce the feedwater flow. However, the feedwater flow could not be decreased because of the valve's failed positioner. When the 1C steam generator level reached approximately 80%, the Shift Engineer (senior reactor operator) ordered a manual reactor trip (at 0956).

Following the manual reactor trip, an expected automatic feedwater isolation occurred. The auxiliary feedwater BA! pumps automatically started to maintain steam generator levels. At 1022, the feedwater isolation signal was reset and the startup feedwater pump was started. By 1114, the auxiliary feedwater pumps were secured and the unit was stabilized in Hot Standby.

This Licensee Event Report (LER) is submitted in accordance with 10CFR50.73 (a)(2)(iv) due to the manual Reactor Protection System and automatic Engineered Safety Feature System actuations.

C. CAUSE OF EVENT:

The event was initiated by the execution of the Main Steam Isolation Valves Partial Stroke Test, 1BVS 7.1.5-2. The feedwater regulating valve

(1FW530) responded to the steam perturbation caused by the partial stroke. However, the valve failed open when the valve positioner feedback arm detached from the valve follower. The positioner feedback arm is attached to the valve follower by a nut and bolt combination. The positioner disengaged from the bolt because the nut was missing.

Valve 1FWS30 has experienced problems previously which involved intermittent oscillations (DVR 6-1-88-237, December 15, 1988). The cause of these oscillations is indeterminate. The oscillations are not considered directly related to the positioner failure because similar oscillations have occurred in the 1FW530 valve subsequent to the replacement of the positioner. We are continuing to monitor the valve for oscillations to determine their root cause.

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#### D. SAFETY ANALYSIS:

The Shift Engineer was correct to order a manual reactor trip. Due to the failed feedwater regulating valve, further attempts to control steam generator level would have been unsuccessful. The reactor would have tripped very shortly after the high-level feedwater isolation imminent in the 1C steam generator (P-14). The manual trip demonstrated the attentiveness and good judgement of the operators and assured plant shutdown while parameters were conservative with respect to their trip setpoints.

Neither the plant nor public safety were affected by the event. All safety systems actuated as designed. The auxiliary feedwater pumps actuated and provided feedwater flow to the steam generators as required. The plant was stabilized in Hot Standby for investigation of the trip and implementation of corrective action. The event occurred under the most severe and limiting condition of full power operation.

#### E. CORRECTIVE ACTIONS:

After discussions with Bailey Meter Company, the positioner manufacturer, the linkage between the valve positioner and the valve follower was restored and enhanced by the addition of a star washer. "Loctite" was also placed on the connecting bolt threads to further ensure that tightness of the linkage is maintained. These enhancements were performed to all feedwater regulating valves on both units.

A number of valves with similar types of positioner were also inspected. Several other positioners with loose nuts were found. A request will be sent to Corporate Engineering to evaluate the station's corrective action

in securing the positioner and to investigate further possible enhancements. AIR 454-225-89-0058 will track this item.

To ensure the adequacy of the corrective action to the feedwater regulating valve's positioner in the interim, the station will perform periodic inspections of the positioners on all feedwater regulating valves. These inspections will be tracked by AIR 454-225-89-0059.

F. PREVIOUS OCCURRENCES:

None

G. COMPONENT FAILURE DATA:

MANUFACTURER NOMENCLATURE MODEL NUMBER MFG PART NUMBER

Bailey Meter Co. Positioner 5321030

ATTACHMENT 1 TO 8903100242 PAGE 1 OF 1

Commonwealth Edison  
Byron Nuclear Station  
4450 North German Church Road  
Byron, Illinois 61010

March 1, 1989

Ltr: BYRON 89-0208

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Dear Sir:

The enclosed Licensee Event Report from Byron Generating Station is being transmitted to you in accordance with the requirements of 10CFR50.73(a)(2)(iv).

This report is number 89-02; Docket No. 50-454.

Sincerely,

R. Pleniewicz  
Station Manager  
Byron Nuclear Power Station

RP/PI/bb

Enclosure: Licensee Event Report No. 89-02

cc: A. Bert Davis, NRC Region III Administrator  
P. Brochman, NRC Senior Resident Inspector  
INPO Record Center  
CECo Distribution List

(0242R/0031R)

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